



## Work-related heat stress concerns in automotive industries: A case study from Chennai, India

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**Year:** 2009  
**Journal:** Global Health Action. 2: 58-64

### Abstract:

**Background:** Work-related heat stress assessments, the quantification of thermal loads and their physiological consequences have mostly been performed in non-tropical developed country settings. In many developing countries (many of which are also tropical), limited attempts have been made to create detailed job-exposure profiles for various sectors. We present here a case study from Chennai in southern India that illustrates the prevalence of work-related heat stress in multiple processes of automotive industries and the efficacy of relatively simple controls in reducing prevalence of the risk through longitudinal assessments. **Methods:** We conducted workplace heat stress assessments in automotive and automotive parts manufacturing units according to the protocols recommended by NIOSH, USA. Sites for measurements included indoor locations with process-generated heat exposure, indoor locations without direct process-generated heat exposure and outdoor locations. Nearly 400 measurements of heat stress were made over a four-year period at more than 100 locations within eight units involved with automotive or automotive parts manufacturing in greater Chennai metropolitan area. In addition, cross-sectional measurements were made in select processes of glass manufacturing and textiles to estimate relative prevalence of heat stress. **Results:** Results indicate that many processes even in organised large-scale industries have yet to control heat stress-related hazards adequately. Upwards of 28% of workers employed in multiple processes were at risk of heat stress-related health impairment in the sectors assessed. **Implications of longitudinal baseline data for assessing efficacy of interventions as well as modelling potential future impacts from climate change (through contributions from worker health and productivity impairments consequent to increases in ambient temperature) are described.** **Conclusions:** The study re-emphasises the need for recognising heat stress as an important occupational health risk in both formal and informal sectors in India. Making available good baseline data is critical for estimating future impacts.

**Source:** <http://dx.doi.org/10.3402/gha.v2i0.2060>

### Resource Description

#### Exposure :

weather or climate related pathway by which climate change affects health

Temperature

**Temperature:** Extreme Heat

#### Geographic Feature:

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resource focuses on specific type of geography

Tropical

## **Geographic Location:**

resource focuses on specific location

Non-United States

**Non-United States:** Asia

**Asian Region/Country:** India

## **Health Co-Benefit/Co-Harm (Adaption/Mitigation):**

specification of beneficial or harmful impacts to health resulting from efforts to reduce or cope with greenhouse gases

A focus of content

## **Health Impact:**

specification of health effect or disease related to climate change exposure

Injury

## **Intervention:**

strategy to prepare for or reduce the impact of climate change on health

A focus of content

## **Mitigation/Adaptation:**

mitigation or adaptation strategy is a focus of resource

Adaptation

**Population of Concern:** A focus of content

## **Population of Concern:**

populations at particular risk or vulnerability to climate change impacts

Low Socioeconomic Status, Workers

## **Resource Type:**

format or standard characteristic of resource

Research Article

## **Timescale:**

time period studied

Time Scale Unspecified

## **Vulnerability/Impact Assessment:**

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content